Houssein El Turkey* (houssein.el.turkey@gmail.com). Complexity and z-complexity over Lie superalgebras.

We compute the complexity of certain families of modules over a classical Lie superalgebra defined over the complex numbers. Boe, Kujawa, and Nakano computed the complexity of the simple and the Kac modules over the general linear Lie superalgebra of Type A. A natural continuation to their work is computing the complexity of the same family of modules over the ortho-symplectic Lie superalgebra of Type C. We give a geometric interpretation of the complexity similar to that in Type A. The complexity is not a categorical invariant. However, we compute a categorical invariant called the z-complexity and we interpret this invariant geometrically in terms of a specific detecting subsuperalgebra. In addition, we compute the complexity and the z-complexity of the simple modules over the Lie superalgebras \( \text{osp}(3|2) \), \( D(2, 1; \alpha) \), \( G(3) \), and \( F(4) \). (Received June 27, 2014)